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FRUIT CROPS
ESTIMATED PRODUCTION COSTS
ONTARIO, 1985

ECONOMICS AND POLICY
COORDINATION BRANCH

ONTARIO MINISTRY OF AGRICULTURE AND FOOD
LEGISLATIVE BUILDINGS, TORONTO, ONTARIO, M7A 1B6

ECONOMICS INFORMATION

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ESTIMATED PRODUCTION COSTS
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INTRODUCTION

Since 1948, the Economics and Policy Coordination Branch has carried out comprehensive studies of major field and horticultural crops grown in Ontario. These studies were designed to determine costs and returns of various farm enterprises, as well as the physical amounts of production inputs required.

Traditionally, data was collected by means of farmer interviews. Published reports of these studies in the form of county, regional and provincial averages found a wide distribution among extension and research personnel, educational institutions, farm organizations, lending institutions and policy-makers. Cooperating farmers received reports showing their individual information in comparison with group averages.

With this extensive background in the development of cost studies, the Economics and Policy Coordination Branch has begun to use computers in the preparation of production cost data. Methods of computer simulation have now replaced the time consuming process of data collection, tabulation and analysis.

With this new approach, special attention is paid to the physical quantities and prices of inputs for each crop studied. The technology used in the production of various crops is carefully examined so that the computer models accurately reflect the appropriate production technology for each commodity.

Information on physical inputs is obtained from a number of sources, including:

1. Previous studies done by this Branch;
2. Surveys of the farm supply trade;
3. Technical input/output coefficients; and
4. The consensus of producers, researchers, and extension agribusiness personnel.

THE DEVELOPMENT OF THE ACRES PROGRAM

A large number of computer programs that generate budgets and crop production cost estimates are now in existence. These computer programs vary in their degree of sophistication and in the amount of detail prepared. A large number of estimates covering a wide range of conditions can be generated quickly and efficiently. The effect of varying levels of technology, management practices and price levels can also be analyzed.

Cost of production estimates used in this report are based on the ACRES program. ACRES (Agricultural Crop Enterprise System) is a FORTRAN program originally written in Montana, adapted by Alberta Agriculture and recently modified and re-written by the Economics and Policy Coordination Branch to meet Ontario conditions. The 1985 cost of production estimates for peaches, pears, sweet cherries, sour cherries, strawberries, and raspberries are based on these computer models. The 1985 cost of production estimates for apples and grapes are updated versions of recent studies.

METHODS AND PROCEDURES

The information used in the preparation of each production cost estimate in this report was prepared through the use of recent Economics and Policy Coordination Branch studies, plus consultations with producers and extension, research and agribusiness personnel.

For each crop cost estimate in this report, the data was organized into variable and fixed costs and totalled to arrive at the cost of production both on a per acre and per hectare basis. Variable costs are those which vary directly with the production of each crop grown. They include seed, plants, hired labor, fertilizer, herbicides, insecticides, fungicides, other materials, machinery operating costs, marketing charges and interest on operating capital. Fixed cost inputs are operator labor, management allowance, interest on land, machinery, buildings, depreciation on machinery and buildings, taxes on real estate (net of farm tax rebate), and other overhead cost items.

In this report, cash costs of production are also determined. Cash costs include total variable costs, interest on the debt portion of investment in tractors and machines, taxes and other overhead costs.

For each crop, operational costs including labor, tractor and machine costs are shown on a per acre and per hectare basis. Where an operation was performed more than once, the total cost for labor, tractor and other equipment represent the total cost of the multiple operations.

LABOR HOURS AND COSTS

The required number of labor hours was based on previous studies, as well as through discussions with those familiar with the production of each study crop. There are some crops which are harvested on a fixed rate per unit. For these crops, the labor hours and costs vary with the yields used in the cost estimate.

The operator labor hours were valued at $6.50 per hour. In addition, an allowance to management was made at the rate of 5 percent of the gross income.

The hired labor cost was calculated on a per hour basis and included benefits such as worker compensation, unemployment insurance, and the Canada Pension Plan. The rates varied according to area, crop, and skill involved.

For some crops, piece work rates were used which were suggested by local farm labor pools. An allowance of 15 percent of basic earnings was added to cover benefits.

MATERIALS

The amount of each material input was based on commonly used practices. Input prices were based on averages charged by the trade in the area where the particular crop was grown. For most crops, the quantities of seed, plants, fertilizer nutrients and other inputs are given on a per hectare basis. Because of the multitude of products available, pesticides are grouped as herbicides, insecticides, fungicides, nematicides, etc. The cost and quantity of non-returnable containers was reported where applicable.

TRACTORS, MACHINES AND TRUCKS

Machinery complements used in the various crop production cost estimates were assumed to be five years old. Tractor and machine costs included depreciation, interest on investment, insurance, storage, repairs, maintenance, fuel and lubrication. If machines were used for other farming operations, costs were adjusted based on the proportion of use on the study crop. The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to non-powered machines was applied.

Interest on machinery investment was calculated on the assumption that the equity portion was 70 percent and the debt portion was 30 percent of the total depreciated value. For this report, interest on equity was calculated at 6.5 percent, which was the average interest rate paid by chartered banks on savings accounts. The interest on the debt portion was based on the average prime rate of 10.8 percent plus one for a total of 11.8 percent. Insurance and storage costs for machinery were based on 1.5 percent of their purchase price.

Repair and maintenance costs for individual machines were based on the factsheet "Cost of Owning and Operating Farm Machines", Agdex 825, Ontario Ministry of Agriculture and Food.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farmgate fuel prices were used: gasoline - 38.0¢/litre; diesel - 38.0¢/litre. The cost of oil, grease and filters was calculated at 15 percent of the fuel cost.

CUSTOM FARMWORK SERVICES

There are crops produced in Ontario where it is an accepted practice to use custom farmwork services to perform certain operations. Usually, these services are employed when the farmer needs specialized machines such as harvesters, sprayers, fertilizer applicators and trucks. Most of these machines cannot be economically owned and operated by one producer. Custom costs were itemized on a per hectare or per acre basis.

LAND CHARGES

Determining the annual cost for land use is a controversial part in any study on production costs. During the past two decades, purchasers of farmland have been willing to pay more for it than can be justified from agricultural production. Purchasers believe the speculative aspect of land ownership offers benefits above those received from crop production. For this reason, the appropriate interest rate used in calculating the interest cost on bare land for these crop production estimates was the real interest rate. The "real interest rate" is defined as the current lending rate of interest adjusted for inflation.

In this report, interest on land investment was calculated as follows:

1. The value of bare land was based on the average value for land in areas of Ontario where the production of each study crop predominates.

2. The interest rate applied was the 5-year average of the current lending rate discounted for the rate of inflation, which resulted in a 6.4 percent rate.

The farm real estate taxes used for each study crop reflect the area of production and are subject to Ontario's Farm Tax Reduction Program.

BUILDING COSTS

For those crops where buildings are used in grading, packing and/or storage, a building cost allowance was made.

The initial cost of these structures was based on the assumption that buildings were five years old.

Depreciation	%
Steel and concrete structures	2.5
Wood structures	5.0
Greenhouses	2.0

The interest on building investment was set at 6.4 percent which was also used in calculating interest on land investment.

Repairs and Maintenance	%
Steel structures	1.0
Concrete structures	0.25
Wood structures	1.5

Insurance

0.5 percent of initial cost

The cost of machine housing was covered under tractor and machine costs.

Allowances are made for the use of picking-baskets, storage-bins, and other pieces of reusable equipment required in the production of certain crops.

INTEREST ON OPERATING CAPITAL

Interest on operating capital required to finance each crop was calculated from the time an expenditure was made until the time income was generated from sales. Operating capital includes the cost of materials, fuel, repairs, hired labor and other cash items. In this study, the interest rate applied to operating capital was the average prime rate of 10.8 percent plus 1 percent.

OTHER OVERHEAD

This allowance covers such items as the study crop's share of utilities, accounting and administration costs, use of the farm automobile, and general farm maintenance.

OTHER COST CONSIDERATIONS

Depending on the crop studied, there are certain additional cost factors such as crop insurance, marketing board fees, grading charges and selling commissions.

YIELD AND RETURNS

For each study crop presented in this report, a footnote to the table defines how the average yield and average price were calculated.

Additional information on average yields and prices is shown in the Appendix of this report.

GROSS MARGIN ANALYSIS

Gross margin is the amount above the variable costs that a crop contributes to the operator for his wages, management, and to the investment in machinery and land.

CASH ANALYSIS

The cash analysis section estimates the returns over cash costs. Cash costs comprise all variable costs, as well as interest on the debt portion of tractor and machine investment, real estate taxes and other overhead costs.

Table 1. - Apples on Standard Trees: Updated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting	1,391	563
Other	269	109
Fertilizer	57	23
Pesticides	568	230
Mouse bait	12	5
Bee rental	10	4
Tractor operating costs	133	54
Machine operating costs	131	53
Bin usage	198	80
O.A.M.C. fees	62	25
Crop and liability insurance	106	43
Interest on operating capital	86	35
TOTAL VARIABLE COSTS	3,023	1,224
FIXED COSTS		
Operator labor, 51.9 hours/ha	337	137
Tractor use, depreciation, interest, insurance, storage	79	32
Machine use, depreciation, interest, insurance, storage	114	46
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
TOTAL FIXED COSTS	881	357
TOTAL COSTS [a]	3,904	1,581
COST PER UNIT (Yield was 18.5 tonne/ha or 394 bu/acre)	211/tonne	4.01/bu

a Costs are to the end of harvest and do not include marketing or storage charges.

Note: Costs are an update based on "Apple Production Costs for Standard and Size-Controlling Trees, Ontario, 1982".

Table 2. - Apples on Size-Controlling Trees: Updated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting	1,231	498
Other	514	208
Fertilizer	89	36
Pesticides	682	276
Mouse bait	20	8
Bee rental	19	8
Tractor operating costs	131	53
Machine operating costs	106	43
Bin usage	304	123
O.A.M.C. fees	62	25
Crop and liability insurance	138	56
Interest on operating capital	97	39
TOTAL VARIABLE COSTS	3,393	1,373
FIXED COSTS		
Operator labor, 49.4 hours/ha	321	130
Tractor use, depreciation, interest, insurance, storage	99	40
Machine use, depreciation, interest, insurance, storage	128	52
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
TOTAL FIXED COSTS	899	364
TOTAL COSTS [a]	4,292	1,737
COST PER UNIT (Yield was 21.9 tonne/ha or 466 bu/acre)	196/tonne	3.73/bu

a Costs are to the end of harvest and do not include marekting or storage charges.

Note: Costs are an update based on "Apple Production Costs for Standard and Size-Controlling Trees, Ontario, 1982".

Table 3. - Sour Cherries for Processing, Hand-Harvested: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Picking 445 hours/ha	1,819	736
Grading 59.3 hours/ha	282	114
Other 37.1 hours/ha	168	68
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	60	24
Insecticides	146	59
Fungicides	264	107
Herbicides	50	20
Other sprays	86	35
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	200	81
Fuel	301	122
Building, repairs and electricity	35	14
Marketing Board fees	242	98
Interest on operating capital	156	63
TOTAL VARIABLE COSTS	4,123	1,668
FIXED COSTS		
Operator labor, 101 hours/ha	659	266
Management allowance, 5% of gross income	391	158
Tractor and machine costs:		
Depreciation	350	142
Interest on investment	200	81
Insurance and storage	96	39
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,436	1,390
TOTAL ALL COSTS	7,559	3,058
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha or 4 ton/acre)	843/tonne	764/ton
GROSS MARGIN ANALYSIS (Based on average prices of $872.91/tonne or $791.90/ton) [a]		
Gross income	7,827	3,168
Total variable costs	4,123	1,668
Gross margin	3,704	1,500
CASH ANALYSIS		
Gross income	7,827	3,168
Cash costs [b]	4,358	1,763
Returns over cash costs	3,469	1,405

[a] The price is the 1985 payment for a quality rating of either 95 or 96 percent.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $86/ha ($35/acre) plus taxes and other overhead costs.

Table 4. - Sour Cherries for Processing, Hand-Harvested: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Pruning and brush removal.....	1	74.1	30.0	634.68	256.84
Fertilizing.....	1	2.47	1.0	30.77	12.45
Cultivation.....	6	7.41	3.0	123.21	49.86
Mowing.....	2	2.47	1.0	58.44	23.65
Weed spraying.....	1	2.47	1.0	45.57	18.44
Spraying.....	6	4.94	2.0	152.42	61.68
Spreading manure.....	1	4.94	2.0	115.01	46.54
Sow cover crop.....	1	1.24	.5	30.77	12.45
General maintenance..	a	2.47	1.0	36.20	14.65
Distribution and collection of containers.....	a	19.8	8.0	298.93	120.97
Picking.....	a	445	180.0	1,846.48	747.23
Sorting and grading..	a	59.3	24.0	281.71	114.00
Marketing-delivery...	a	14.8	6.0	389.35	157.56

a Operation performed as required.

Table 5. - Sour Cherries for Processing, Machine-Harvested: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 37.1 hours/ha	168	68
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	60	24
Insecticides	146	59
Fungicides	264	107
Herbicides	50	20
Other sprays	86	35
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	116	47
Fuel	156	63
Custom harvesting, cooling, delivery	1,977	800
Marketing Board fees	242	98
Interest on operating capital	141	57
TOTAL VARIABLE COSTS	3,720	1,505
FIXED COSTS		
Operator labor, 66.7 hours/ha	435	176
Management allowance, 5% of gross income	391	158
Tractor and machine costs:		
Depreciation	193	78
Interest on investment	119	48
Insurance and storage	42	17
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	2,737	1,107
TOTAL ALL COSTS	6,457	2,612
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha or 4 ton/acre)	720/tonne	653/ton
GROSS MARGIN ANALYSIS (Based on average prices of $872.91/tonne or $791.90/ton) [a]		
Gross income	7,827	3,168
Total variable costs	3,720	1,505
Gross margin	4,107	1,663
CASH ANALYSIS		
Gross income	7,827	3,168
Cash costs [b]	3,921	1,586
Returns over cash costs	3,906	1,582

a The price is the 1985 payment for a quality rating of either 95 or 96 percent.

b Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $52/ha ($21/acre) plus taxes and other overhead costs.

Table 6. - Sour Cherries for Processing, Machine-Harvested: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Pruning and brush removal.....	1	74.1	30.0	634.68	256.84
Fertilizing.....	1	2.47	1.0	30.77	12.45
Cultivation.....	6	7.41	3.0	123.21	49.86
Mowing.....	2	2.47	1.0	58.44	23.65
Weed spraying.....	1	2.47	1.0	45.57	18.44
Spraying.....	6	4.94	2.0	152.42	61.68
Spreading manure.....	1	4.94	2.0	115.01	46.54
Sow cover crop.....	1	1.24	.5	30.77	12.45
General maintenance...	a	2.47	1.0	36.20	14.65

a Operation performed as required.

Table 7. - Sweet Cherries for Fresh Market: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting 247 hours/ha	968	392
Grading 124 hours/ha	588	238
Other 24.7 hours/ha	109	44
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	252	102
Fungicides	260	105
Herbicides	49	20
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Containers	793	321
Tractor and machine costs:		
Repairs and maintenance	185	75
Fuel	227	92
Building, repairs and electricity	42	17
Interest on operating capital	151	61
TOTAL VARIABLE COSTS	3,999	1,618
FIXED COSTS		
Operator labor, 74.1 hours/ha	482	195
Management allowance, 5% of gross income	285	116
Tractor and machine costs:		
Depreciation	307	124
Interest on investment	181	73
Insurance and storage	78	32
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,073	1,244
TOTAL ALL COSTS	7,072	2,862
COST PER UNIT (Based on assumed yields of 4.48 tonne/ha or 2 ton/acre)	1,579/tonne	1,431/ton
GROSS MARGIN ANALYSIS (Based on price $1,274.13/tonne or $11.00 per 3x4 L master) [a]		
Gross income	5,708	2,310
Total variable costs	3,999	1,618
Gross margin	1,709	692
CASH ANALYSIS		
Gross income	5,708	2,310
Cash costs [b]	4,227	1,710
Returns over cash costs	1,481	600

[a] The 1985 price is an average of the previous three years for sweet cherries sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $79/ha ($32/acre) plus taxes and other overhead costs.

Table 8. - Sweet Cherries for Fresh Market: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	397.25	160.76
Fertilizing	1	2.47	1.0	30.77	12.45
Cultivation	4	4.94	2.0	82.14	33.24
Mowing	3	3.71	1.5	87.65	35.47
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	8	9.88	4.0	304.83	123.36
Spreading manure	1	4.94	2.0	115.00	46.54
Sow cover crop	1	1.24	.5	22.73	9.20
General maintenance	a	2.47	1.0	36.20	14.65
Distribution and collection of containers	a	9.88	4.0	152.34	61.65
Picking	a	247	100.0	995.93	403.03
Sorting and grading	a	124	50.0	586.89	237.50
Marketing-delivery	a	9.88	4.0	236.83	95.84

a Operation performed as required.

Table 9. - Sweet Cherries for Canning and Freezing Purposes: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Picking 222 hours/ha	909	368
Grading 124 hours/ha	588	238
Other 24.7 hours/ha	109	44
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	252	102
Fungicides	260	105
Herbicides	49	20
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	185	75
Fuel	227	92
Building, repairs and electricity	29	12
Marketing Board fees	54	22
Interest on operating capital	119	48
TOTAL VARIABLE COSTS	3,156	1,277
FIXED COSTS		
Operator labor, 74.1 hours/ha	482	195
Management allowance, 5% of gross income	287	116
Tractor and machine costs:		
Depreciation	307	124
Interest on investment	181	73
Insurance and storage	78	32
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,075	1,244
TOTAL ALL COSTS	6,231	2,521
COST PER UNIT (Based on assumed yields of 4.48 tonne/ha or 2 ton/acre)	1,391/tonne	1,260/ton
GROSS MARGIN ANALYSIS (Based on average prices of $1,281.25/tonne or $1,161.50) [a]		
Gross income	5,740	2,323
Total variable costs	3,156	1,277
Gross margin	2,584	1,046
CASH ANALYSIS		
Gross income	5,740	2,323
Cash costs [b]	3,384	1,369
Returns over cash costs	2,356	954

[a] The price is the 1985 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $79/ha ($32/acre) plus taxes and other overhead costs.

Table 10. - Sweet Cherries for Canning and Freezing Purposes: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	397.25	160.76
Fertilizing	1	2.47	1.0	30.77	12.45
Cultivation	4	4.94	2.0	82.14	33.24
Mowing	3	3.71	1.5	87.65	35.47
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	8	9.88	4.0	304.83	123.36
Spreading manure	1	4.94	2.0	115.00	46.54
Sow cover crop	1	1.24	.5	22.73	9.20
General maintenance	a	2.47	1.0	36.20	14.65
Distribution and collection of containers	a	9.88	4.0	152.34	61.65
Picking	a	222	90.0	936.87	379.13
Sorting and grading	a	124	50.0	586.89	237.50
Marketing-delivery	a	9.88	4.0	236.83	95.84

a Operation performed as required.

Table 11.- Sweet Cherries for Maraschino Purposes: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Picking 247 hours/ha	968	392
Grading 124 hours/ha	588	238
Other 24.7 hours/ha	109	44
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	252	102
Fungicides	260	105
Herbicides	49	20
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	185	75
Fuel	227	92
Building, repairs and electricity	29	12
Marketing Board fees	54	22
Interest on operating capital	121	49
TOTAL VARIABLE COSTS	3,217	1,302
FIXED COSTS		
Operator labor, 74.1 hours/ha	482	195
Management allowance, 5% of gross income	148	60
Tractor and machine costs:		
Depreciation	307	124
Interest on investment	181	73
Insurance and storage	78	32
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	2,936	1,188
TOTAL ALL COSTS	6,153	2,490
COST PER UNIT (Based on assumed yields of 4.48 tonne/ha or 2 ton/acre)	1,373/tonne	1,245/ton
GROSS MARGIN ANALYSIS (Based on average prices of $663.54/tonne or $601.50/ton) [a]		
Gross income	2,973	1,203
Total variable costs	3,217	1,302
Gross margin	-244	-99
CASH ANALYSIS		
Gross income	2,973	1,203
Cash costs [b]	3,445	1,394
Returns over cash costs	-472	-191

[a] The price is the 1985 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $79/ha ($32/acre) plus taxes and other overhead costs.

Table 12. - Sweet Cherries for Maraschino Purposes: Labor Hours and Operation Costs, Ontario, 1985

Operation	Trees over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	397.25	160.76
Fertilizing	1	2.47	1.0	30.77	12.45
Cultivation	4	4.94	2.0	82.14	33.24
Mowing	3	3.71	1.5	87.65	35.47
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	8	9.88	4.0	304.83	123.36
Spreading manure	1	4.94	2.0	115.00	46.54
Sow cover crop	1	1.24	.5	22.73	9.20
General maintenance	a	2.47	1.0	36.20	14.65
Distribution and collection of containers	a	9.88	4.0	152.34	61.65
Picking	a	247	100.0	995.93	403.03
Sorting and grading	a	124	50.0	586.89	237.50
Marketing-delivery	a	9.88	4.0	236.83	95.84

a Operation performed as required.

Table 13. - Concord Grapes for Processing: Updated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor	697	282
Fertilizer and manure	64	26
Pesticides	304	123
Maintenance, twine, wire, posts, etc	94	38
Tractor operating costs	242	98
Machine operating costs	600	243
Marketing Board fees	63	26
Interest on operating capital	118	48
TOTAL VARIABLE COSTS	2,182	884
FIXED COSTS		
Operator labor, 64.2 hours/ha	417	169
Management allowance, 5% of gross income	119	48
Tractor use, depreciation, interest, insurance, storage	138	56
Machine use, depreciation, interest, insurance, storage	625	253
Interest on land, $11,000/ha @ 6.4%	704	285
Taxes	50	20
Other overhead costs	53	21
TOTAL FIXED COSTS	2,106	852
TOTAL ALL COSTS	4,288	1,736
COST PER UNIT (Based on assumed yields of 7.17 tonne/ha or 3.2 ton/acre)	598/tonne	542/ton
GROSS MARGIN ANALYSIS (Based on average prices of $331.80/tonne or $301.00/ton) [a]		
Gross income	2,379	963
Total variable costs	2,182	884
Gross margin	197	79
CASH ANALYSIS		
Gross income	2,379	963
Cash costs [b]	2,285	925
Returns over cash costs	94	38

a The 1985 price is an average of the previous three years for grapes sold through the Ontario Grape Growers' Marketing Board.

b Cash costs include total varaible costs plus taxes and other overhead costs.

Note: Costs are an update based on "The Economics of Concord and DeChaunac Grape Production in Ontario, 1980".

Table 14. - DeChaunac Grapes for Processing: Updated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor	769	311
Fertilizer and manure	89	36
Pesticides	361	146
Maintenance, twine, wire, posts, etc	77	31
Tractor operating costs	245	99
Machine operating costs	642	260
Marketing Board fees	77	31
Interest on operating capital	128	52
TOTAL VARIABLE COSTS	2,388	966
FIXED COSTS		
Operator labor, 69.2 hours/ha	450	182
Management allowance, 5% of gross income	170	69
Tractor use, depreciation, interest, insurance, storage	128	52
Machine use, depreciation, interest, insurance, storage	642	260
Interest on land, $11,000/ha @ 6.4%	704	285
Taxes	50	20
Other overhead costs	55	22
TOTAL FIXED COSTS	2,199	890
TOTAL ALL COSTS	4,587	1,856
COST PER UNIT (Based on assumed yields of 8.74 tonne/ha or 3.9 ton/acre)	525/tonne	476/ton
GROSS MARGIN ANALYSIS (Based on average price of $388.00/tonne or $352.00/ton) [a]		
Gross income	3,391	1,373
Total variable costs	2,388	966
Gross margin	1,003	407
CASH ANALYSIS		
Gross income	3,391	1,373
Cash costs [b]	2,493	1,008
Returns over cash costs	898	365

a The 1985 price is an average of the previous three years for grapes sold through the Ontario Grape Growers' Marketing Baord.

b Cash costs include total variable costs plus taxes and other overhead costs.

Note: Costs are an update based on "The Economics of Concord and DeChaunac Grape Production in Ontario, 1980".

Table 15. - Clingstone Peaches (108 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting 173 hours/ha	640	259
Grading 39.5 hours/ha	188	76
Other 163 hours/ha	763	309
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	388	157
Fungicides	474	192
Herbicides	49	20
Manure, 11.2 tonne/ha	124	50
Replacement trees, 12/ha	59	24
Tractor and machine costs:		
Repairs and maintenance	200	81
Fuel	257	104
Building, repairs and electricity	29	12
Marketing Board fees	136	55
Interest on operating capital	136	55
TOTAL VARIABLE COSTS	3,561	1,441
FIXED COSTS		
Operator labor, 95.1 hours/ha	618	250
Management allowance, 5% of gross income	267	108
Tractor and machine costs:		
Depreciation	343	139
Interest on investment	200	81
Insurance and storage	82	33
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,250	1,315
TOTAL ALL COSTS	6,811	2,756
COST PER UNIT (Based on assumed yields of 11.2 tonne/ha or 5 ton/acre)	608/tonne	551/ton
GROSS MARGIN ANALYSIS (Based on average prices of $477.68/tonne or $433/ton)[a]		
Gross income	5,350	2,165
Total variable costs	3,561	1,441
Gross margin	1,789	724
CASH ANALYSIS		
Gross income	5,350	2,165
Cash costs [b]	3,799	1,537
Returns over cash costs	1,551	628

[a] The 1985 price is an average of the previous three years for clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/acre) plus taxes and other overhead costs.

Table 16. - Clingstone Peaches (108 trees/acre) for Processing: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Planting replacement trees.....	a	2.47	1.0	16.06	6.50
Pruning and brush removal.....	1	98.9	40.0	659.09	266.72
Cultivation.....	4	4.94	2.0	82.14	33.24
Spreading manure.....	1	3.71	1.5	88.56	35.84
Fertilizing.....	1	2.47	1.0	30.77	12.45
Weed spraying.....	1	2.47	1.0	45.57	18.44
Spraying.....	10	9.9	4.0	304.83	123.36
Hand thinning.....	1	89.0	36.0	422.56	171.00
Mowing.....	4	4.94	2.0	116.88	47.30
General maintenance..	a	7.41	3.0	84.96	34.38
Distribution and collection of containers.....	a	24.7	10.0	376.67	152.43
Picking.....	a	173.0	70.0	667.27	270.03
Grading.....	a	39.5	16.0	187.80	76.00
Marketing-delivery...	a	7.41	3.0	177.62	71.88

a Operation performed as required.

Table 17. - Clingstone Peaches (145 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting 242 hours/ha	897	363
Grading 49.4 hours/ha	234	95
Other 217 hours/ha	1,018	412
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	388	157
Fungicides	474	192
Herbicides	49	20
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	84	34
Tractor and machine costs:		
Repairs and maintenance	235	95
Fuel	324	131
Building, repairs and electricity	29	12
Marketing Board fees	190	77
Interest on operating capital	163	66
TOTAL VARIABLE COSTS	4,327	1,751
FIXED COSTS		
Operator labor, 117 hours/ha	764	309
Management allowance, 5% of gross income	374	152
Tractor and machine costs:		
Depreciation	405	164
Interest on investment	232	94
Insurance and storage	101	41
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,616	1,464
TOTAL ALL COSTS	7,943	3,215
COST PER UNIT (Based on assumed yields of 15.7 tonne/ha and 7.0 ton/acre)	506/tonne	459/ton
GROSS MARGIN ANALYSIS (Based on average prices of $477.68/tonne and $433/ton) [a]		
Gross income	7,490	3,031
Total variable costs	4,327	1,751
Gross margin	3,163	1,280
CASH ANALYSIS		
Gross income	7,490	3,031
Cash costs [b]	4,565	1,847
Returns over cash costs	2,925	1,184

[a] The 1985 price is an average of the previous three years for clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/acre) plus taxes and other overhead costs.

Table 18.- Clingstone Peaches (145 trees/acre) for Processing: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Planting replacement trees.....	a	2.47	1.0	16.06	6.50
Pruning and brush removal.....	1	133.	54.0	905.11	366.28
Cultivation.....	4	4.94	2.0	82.14	33.24
Spreading manure.....	1	3.71	1.5	88.56	35.84
Fertilizing.....	1	2.47	1.0	30.77	12.45
Weed spraying.....	1	2.47	1.0	45.57	18.44
Spraying.....	10	9.9	4.0	304.83	123.36
Hand thinning.....	1	119.	48.0	563.41	228.00
Mowing.....	4	4.94	2.0	116.88	47.30
General maintenance..	a	7.41	3.0	84.96	34.38
Distribution and collection of containers.....	a	34.6	14.0	521.03	210.85
Picking.....	a	242.	98.0	923.28	373.63
Grading.....	a	49.4	20.0	234.75	95.00
Marketing-delivery...	a	9.88	4.0	259.56	105.04

a Operation performed as required.

Table 19. - Freestone Peaches (108 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:	823	333
Harvesting 222 hours/ha	375	152
Grading 79.1 hours/ha	763	309
Other 163 hours/ha		
Fertilizer:	57	23
Am. Nit. 222 kg/ha	61	24
Mur. of Pot. 334 kg/ha	388	157
Insecticides	474	192
Fungicides	49	20
Herbicides	124	50
Manure, 11.2 tonne/ha	59	24
Replacement trees, 12/ha	1,994	807
Containers		
Tractor and machine costs:	213	86
Repairs and maintenance	287	116
Fuel	47	19
Building, repairs and electricity	225	91
Interest on operating capital	5,939	2,403
TOTAL VARIABLE COSTS		
FIXED COSTS	650	263
Operator labor, 100 hours/ha	501	203
Management allowance, 5% of gross income		
Tractor and machine costs:	366	148
Depreciation	213	86
Interest on investmeht	91	37
Insurance and storage	183	74
Building use	1,408	570
Interest on land, $22,000 @ 6.4%	50	20
Taxes	99	40
Other overhead costs	3,561	1,441
TOTAL FIXED COSTS		
TOTAL ALL COSTS	9,500	3,844
COST PER UNIT		
(Based on assumed yields of 11.2 tonne/ha or 5 ton/acre)	848/tonne	769/ton
GROSS MARGIN ANALYSIS		
(Based on average prices of $8.10 per 3x4 L master or $893.57/tonne) [a]		
Gross income	10,008	4,050
Total variable costs	5,939	2,403
Gross margin	4,069	1,647
CASH ANALYSIS		
Gross income	10,008	4,050
Cash costs [b]	6,182	2,501
Returns over cash costs	3,826	1,549

[a] The 1985 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $94/ha ($38/acre) plus taxes and other overhead costs.

Table 20. - Freestone Peaches (108 trees/acre) for Fresh Market: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Planting replacement trees	a	2.47	1.0	16.06	6.50
Pruning and brush removal	1	98.9	40.0	659.09	266.72
Cultivation	4	4.94	2.0	82.14	33.24
Spreading manure	1	3.71	1.5	88.56	35.84
Fertilizing	1	2.47	1.0	30.77	12.45
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	10	9.9	4.0	304.83	123.36
Hand thinning	1	89.0	36.0	422.56	171.00
Mowing	4	4.94	2.0	116.88	47.30
General maintenance	a	2.47	3.0	84.96	34.38
Distribution and collection of containers	a	24.7	10.0	376.67	152.43
Picking	a	222	90.0	850.13	344.03
Grading and packing	a	79.1	32.0	375.61	152.00
Marketing-delivery	a	12.4	5.0	296.04	119.80

a Operation performed as required.

Table 21.- Freestone Peaches (145 trees/acre) for Fresh Market: Estimated Cost of Production, 1985

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting 311 hours/ha	1,151	466
Grading 98.8 hours/ha	469	190
Other 217 hours/ha	1,018	412
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	388	157
Fungicides	474	192
Herbicides	49	20
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	84	34
Containers	2,792	1,130
Tractor and machine costs:		
Repairs and maintenance	235	95
Fuel	324	131
Building, repairs and electricity	47	19
Interest on operating capital	286	116
TOTAL VARIABLE COSTS	7,559	3,059
FIXED COSTS		
Operator labor, 117 hours/ha	764	309
Management allowance, 5% of gross income	699	283
Tractor and machine costs:		
Depreciation	405	164
Interest on investment	232	94
Insurance and storage	101	41
Building use	183	74
Interest on land, $22,000/ha @ 6.4%	1,408	570
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	3,941	1,595
TOTAL ALL COSTS	11,500	4,654
COST PER UNIT (Based on assumed yields of 15.7 tonne/ha and 7.0 ton/acre)	732/tonne	665/ton
GROSS MARGIN ANALYSIS (Based on average prices of $893.57/tonne and $8.10 per 3x4 L master) [a]		
Gross income	14,011	5,670
Total variable costs	7,559	3,059
Gross margin	6,452	2,611
CASH ANALYSIS		
Gross income	14,011	5,670
Cash costs [b]	7,810	3,160
Returns over cash costs	6,201	2,510

a The 1985 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

b Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $102/ha ($41/acre) plus taxes and other overhead costs.

Table 22.- Freestone Peaches (145 trees/acre) for Fresh Market: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Planting replacement..	a	2.47	1.0	16.06	6.50
Pruning and brush removal.....	1	133.	54.0	905.11	366.28
Cultivation.....	4	4.94	2.0	82.14	33.24
Spreading manure.....	1	3.71	1.5	88.56	35.84
Fertilizing.....	1	2.47	1.0	30.77	12.45
Weed spraying.....	1	2.47	1.0	45.57	18.44
Spraying.....	10	9.9	4.0	304.83	123.36
Hand thinning.....	1	119.	48.0	563.41	228.00
Mowing.....	4	4.94	2.0	116.88	47.30
General maintenance...	a	2.47	3.0	84.96	34.38
Distribution and collection of containers.....	a	34.6	14.0	521.03	210.85
Picking.....	a	311.	126	1,179.28	477.23
Grading and packing...	a	98.8	40.0	469.51	190.00
Marketing-delivery....	a	12.4	5.0	296.04	119.80

a Operation performed as required.

Table 23. - Bartlett Pears for Fresh Market: Estimated Cost of Production, Ontario, 1985

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
harvesting 98.8 hours/ha	341	138
grading 29.7 hours/ha	141	57
other 39.5 hours/ha	175	71
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	450	182
Fungicides	42	17
Herbicides	49	20
Manure 11.2 tonne/ha	124	50
Cover crop seed	10	4
Containers	1,362	551
Tractor and machine costs:		
Repairs and maintenance	173	70
Fuel	261	106
Buildings, repairs and electricity	54	22
Interest on operating capital	128	52
TOTAL VARIABLE COSTS	3,428	1,387
FIXED COSTS		
Operator labor, 91.4 hours/ha	594	241
Management allowance, 5% of gross income	307	124
Tractor and machine costs:		
Depreciation	301	122
Interest on investment	174	70
Insurance and storage	76	31
Building use	183	74
Interest on land, $11,000/ha @ 6.4%	704	285
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	2,488	1,007
TOTAL ALL COSTS	5,916	2,394
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha or 4 ton/acre)	660/tonne	598/ton
GROSS MARGIN ANALYSIS (Based on price $6.90 per 3x4 L master or $684.29 per tonne) [a]		
Gross income	6,138	2,484
Total variable costs	3,428	1,387
Gross margin	2,710	1,097
CASH ANALYSIS		
Gross income	6,138	2,484
Cash costs [b]	3,654	1,478
Returns over cash costs	2,484	1,006

[a] The 1985 price is an average of the 1982-84 price for Bartlett pears sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $77/ha ($31/acre) plus taxes and other overhead costs.

Table 24. - Bartlett Pears for Fresh Market: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Pruning and brush removal	1	76.6	31.0	642.46	259.99
Fertilizing	1	2.47	1.0	30.77	12.45
Cultivation	4	4.94	2.0	82.14	33.24
Mowing	2	2.47	1.0	58.44	23.65
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	6	4.94	2.0	152.42	61.68
Manure spreading	1	3.71	1.5	88.56	35.84
Sow cover crop	1	1.24	.5	22.73	9.20
General maintenance	a	2.47	1.0	36.20	14.65
Distribution and collection of containers	a	19.8	8.0	301.89	122.17
Picking	a	98.9	40.0	367.28	148.63
Sorting and grading	a	29.7	12.0	140.85	57.00
Marketing-delivery	a	9.9	4.0	236.83	95.84

a Operation performed as required.

Table 25. - Bartlett Pears for Processing: Estimated Cost of Production, Ontario, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
harvesting 98.8 hours/ha	341	138
grading 29.7 hours/ha	141	57
other 39.5 hours/ha	175	71
Fertilizer:		
Am. Nit. 222 kg/ha	57	23
Mur. of Pot. 334 kg/ha	61	24
Insecticides	450	182
Fungicides	42	17
Herbicides	49	20
Manure 11.2 tonne/ha	124	50
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	173	70
Fuel	261	106
Building, repairs and electricity	29	12
Marketing Board fees	109	44
Interest on operating capital	79	32
TOTAL VARIABLE COSTS	2,101	850
FIXED COSTS		
Operator labor 91.4 hours/ha	594	241
Management allowance, 5% of gross income	151	61
Tractor and machine costs:		
Depreciation	301	122
Interest on investment	174	70
Insurance and storage	76	31
Building use	183	74
Interest on land, $11,000/ha @ 6.4%	704	285
Taxes	50	20
Other overhead costs	99	40
TOTAL FIXED COSTS	2,332	944
TOTAL ALL COSTS	4,433	1,794
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha or 4 ton/acre)	494/tonne	448/ton
GROSS MARGIN ANALYSIS (Based on average prices of $340.50/tonne or $309/ton) [a]		
Gross income	3,025	1,224
Total variable costs	2,101	850
Gross margin	924	374
CASH ANALYSIS		
Gross income	3,025	1,224
Cash costs [b]	2,327	941
Returns over cash costs	698	283

[a] The 1985 price is an average of the previous three years based on a weighted average of 90% No.1 and 10% No.2 Bartlett pears.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $77/ha ($31/acre) plus taxes and other overhead costs.

Table 26. - Bartlett Pears for Processing: Labor Hours and Operation Costs, Ontario, 1985

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	76.6	31.0	642.46	259.99
Fertilizing	1	2.47	1.0	30.77	12.45
Cultivation	4	4.94	2.0	82.14	33.24
Mowing	2	2.47	1.0	58.44	23.65
Weed spraying	1	2.47	1.0	45.57	18.44
Spraying	6	4.94	2.0	152.42	61.68
Manure spreading	1	3.71	1.5	88.56	35.84
Sow cover crop	1	1.24	.5	22.73	9.20
General maintenance	1	2.47	1.0	36.20	14.65
Distribution and collection of containers	a	19.8	8.0	301.89	122.17
Picking	a	98.9	40.0	367.28	148.63
Sorting and grading	a	29.7	12.0	140.85	57.00
Marketing-delivery	a	9.9	4.0	236.83	95.84

a Operation performed as required.

Table 27. - Strawberry Establishment Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 168 hours/ha	672	272
Fertilizer:		
34-0-0 - 80 kg/ha	20	8
10-20-20 - 600 kg/ha	151	61
Plant starter, 8 kg/ha	17	7
Insecticides	27	11
Fungicides	35	14
Herbicides	153	62
Manure, 45 tonne/ha	494	200
Green manure seed	15	6
Plants, 12,355/ha	593	240
Fumigant	388	157
Straw, 7.4 tonne/ha	370	150
Tractor and machine costs:		
Repairs and maintenance	131	53
Fuel	185	75
Custom application, fumigant	25	10
Interest on operating capital	423	171
TOTAL VARIABLE COSTS	3,699	1,497
FIXED COSTS		
Operator labor, 49.4 hours/ha	321	130
Tractor and machine costs:		
Depreciation	361	146
Interest on investment	203	82
Insurance and storage	74	30
Interest on land, $4,900/ha @ 6.4%/2 years	628	254
Taxes, 2 years	74	30
Other overhead costs	247	100
TOTAL FIXED COSTS	1,908	772
TOTAL ESTABLISHMENT COSTS	5,607	2,269

Table 28. - Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 64.2 hours/ha	257	104
Fertilizer:		
34-0-0 100 kg/ha	27	11
10-20-20 500 kg/ha	124	50
Herbicides	56	23
Straw 7.4 tonne/ha	370	150
Tractor and machine costs:		
Repairs and maintenance	53	21
Fuel	74	30
Interest on operating capital	94	38
TOTAL VARIABLE COSTS	1,055	427
FIXED COSTS		
Operator labor, 12.4 hours/ha	80	32
Tractor and machine costs:		
Depreciation	129	52
Interest on investment	72	29
Insurance and storage	26	11
TOTAL FIXED COSTS	307	124
TOTAL RENOVATION COSTS	1,362	551

Table 29. - Strawberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 29.6 hours/ha	118	48
Harvest 1,105 hours/ha	3,425	1,386
Insecticides	126	51
Fungicides	237	96
Containers, 14,827 quarts/ha	2,491	1,008
Tractor and machine costs:		
Repairs and maintenance	104	42
Fuel	169	69
Interest on operating capital	26	11
TOTAL VARIABLE COSTS	6,696	2,711
FIXED COSTS		
Operator labor:		
Preharvest 14.8 hours/ha	96	39
Harvest 44.5 hours/ha	289	117
Management allowance, 5% of gross income	704	285
Tractor and machine costs:		
Depreciation	230	93
Interest on investment	124	50
Insurance and storage	47	19
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
Other overhead costs	297	120
TOTAL FIXED COSTS	2,138	865
TOTAL PREHARVEST AND HARVEST COSTS	8,834	3,576
GROSS MARGIN ANALYSIS (Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $1.68/kg or 95¢/quart)		
Gross income	14,085	5,700
Variable costs:		
Establishment (¼ of cost) [a]	925	374
Preharvest and harvest	6,696	2,711
Renovation (3/4 of cost) [a]	791	320
Total	8,412	3,405
Gross margin	5,673	2,295
CASH ANALYSIS		
Gross income	14,085	5,700
Cash costs: [b]		
Establishment (¼ of cost) [a]	1,028	416
Preharvest and harvest	7,134	2,887
Renovation (3/4 of cost) [a]	815	330
Total	8,977	3,633
Returns over cash costs	5,108	2,067

[a] The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $101/ha ($41/acre) plus taxes and other overhead costs.

Table 30.- Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 29.6 hours/ha	118	48
Harvest 178 hours/ha	712	288
Insecticides	126	51
Fungicides	238	96
Tractor and machine costs:		
Repairs and maintenance	104	42
Fuel	169	69
Advertising	346	140
Interest on operating capital	18	7
TOTAL VARIABLE COSTS	1,831	741
FIXED COSTS		
Operator labor:		
Preharvest 14.8 hours/ha	96	39
Harvest 44.5 hours/ha	289	117
Management allowance, 5% of gross income	445	180
Tractor and machine costs:		
Depreciation	230	93
Interest on investment	124	50
Insurance and storage	47	19
Interest on land, $4,900/ha @ 6.4%	313	127
Taxes	37	15
Other overhead costs	297	120
TOTAL FIXED COSTS	1,878	760
TOTAL PREHARVEST AND HARVEST COSTS	3,709	1,501
GROSS MARGIN ANALYSIS (Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $1.06/kg or 60¢/quart)		
Gross income	8,896	3,600
Variable costs:		
Establishment (¼ of cost) [a]	925	374
Preharvest and harvest	1,831	741
Renovation (3/4 of cost) [a]	791	320
Total	3,547	1,435
Gross margin	5,349	2,165
CASH ANALYSIS		
Gross income	8,896	3,600
Cash costs: [b]		
Establishment (¼ of cost) [a]	1,028	416
Preharvest and harvest	2,266	917
Renovation (3/4 of cost) [a]	815	330
Total	4,109	1,663
Returns over cash costs	4,787	1,937

a The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

b Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $101/ha ($41/acre) plus taxes and other overhead costs.

Table 31.- Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Fertilizer:		
8-32-16 150 kg/ha	43	17
Am. Nitrate 100 kg/ha	27	11
Herbicides	467	189
Green manure seed	12	5
Tractor and machine costs:		
Repairs and maintenance	25	10
Fuel	37	15
Interest on operating capital	180	73
TOTAL VARIABLE COSTS	791	320
FIXED COSTS		
Operator labor, 12.4 hours/ha	80	32
Tractor and machine costs:		
Depreciation	64	26
Interest on investment	34	14
Insurance and storage	12	5
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
TOTAL FIXED COSTS	541	219
TOTAL "PREPLANT YEAR" COSTS	1,332	539

Table 32.- Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 89 hours/ha	320	130
Fertilizer:		
15-15-15 445 kg/ha	111	45
10-52-10 14 kg/ha	32	13
Insecticides	15	6
Fungicides	17	7
Plants, 4,942/ha	1,483	600
Cover crop seed	52	20
Trickle irrigation	1,606	650
Trellis posts	173	70
Tractor and machine costs:		
Repairs and maintenance	173	70
Fuel	133	54
Interest on operating capital	728	295
TOTAL VARIABLE COSTS	4,843	1,960
FIXED COSTS		
Operator labor, 55.6 hours/ha	361	146
Tractor and machine costs:		
Depreciation	378	153
Interest on investment	232	94
Insurance and storage	82	33
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
Other overhead costs	247	100
TOTAL FIXED COSTS	1,651	668
TOTAL "PLANTING YEAR" COSTS	6,494	2,628

Table 33.- Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 121 hours/ha	445	180
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	59	24
Fungicides	410	166
Herbicides	5	2
Trellis wire	544	220
Tractor and machine costs:		
Repairs and maintenance	227	92
Fuel	97	39
Interest on operating capital	111	45
TOTAL VARIABLE COSTS	1,987	804
FIXED COSTS		
Operator labor, 29.7 hours/ha	193	78
Tractor and machine costs:		
Depreciation	291	118
Interest on investment	183	74
Insurance and storage	62	25
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
Other overhead costs	247	100
TOTAL FIXED COSTS	1,327	537
TOTAL "GROWTH YEAR" COSTS	3,314	1,341

Table 34.- Raspberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 123.6 hours/ha	489	198
Harvest 858.7 hours/ha	3,415	1,382
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	59	24
Fungicides	410	166
Herbicides	180	73
Miticides	156	63
Containers, 6,672 pints/ha	902	365
Trellis materials	62	25
Tractor and machine costs:		
Repairs and maintenance	487	197
Fuel	217	88
Comfort station rental	37	15
Interest on operating capital	192	78
TOTAL VARIABLE COSTS	6,695	2,710
FIXED COSTS		
Operator labor:		
Preharvest 87.7 hours/ha	570	231
Harvest 74.1 hours/ha	482	195
Management allowance, 5% of gross income	500	202
Tractor and machine costs:		
Depreciation	610	247
Interest on investment	381	154
Insurance and storage	133	54
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
Other overhead costs	371	150
TOTAL FIXED COSTS	3,398	1,375
TOTAL PREHARVEST AND HARVEST COSTS	10,093	4,085
GROSS MARGIN ANALYSIS (Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed price of $1.50/pint)		
Gross income	10,008	4,050
Variable costs:		
Amortized establishment costs [a]	2,674	1,082
Preharvest and harvest	6,695	2,710
Total	9,369	3,792
Gross margin	639	258
CASH ANALYSIS		
Gross income	10,008	4,050
Cash costs:		
Amortized establishment costs [a]	2,674	1,082
Preharvest and harvest [b]	7,269	2,942
Total	9,943	4,024
Returns over cash costs	65	26

a Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.4 percent.

b Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $166/ha ($67/acre) plus taxes and other overhead costs.

Table 35.- Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, 1985

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 123.6 hours/ha	489	198
Harvest 74.1 hours/ha	301	122
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	59	24
Fungicides	410	166
Herbicides	180	73
Miticides	156	63
Trellis materials	62	25
Tractor and machine costs:		
Repairs and maintenance	487	197
Fuel	217	88
Comfort station rental	37	15
Checkout equipment rental	247	100
Advertising	371	150
Interest on operating capital	94	38
TOTAL VARIABLE COSTS	3,199	1,295
FIXED COSTS		
Operator labor:		
Preharvest 87.7 hours/ha	570	231
Harvest 49.4 hours/ha	321	130
Management allowance, 5% of gross income	334	135
Tractor and machine costs:		
Depreciation	610	247
Interest on investment	381	154
Insurance and storage	133	54
Interest on land, $4,900/ha @ 6.4%	314	127
Taxes	37	15
Other overhead costs	494	200
TOTAL FIXED COSTS	3,194	1,293
TOTAL PREHARVEST AND HARVEST COSTS	6,393	2,588
GROSS MARGIN ANALYSIS (Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed prices of $1.00/pint)		
Gross income	6,672	2,700
Variable costs:		
Amortized establishment costs [a]	2,674	1,082
Preharvest and harvest	3,199	1,295
Total	5,873	2,377
Gross margin	799	323
CASH ANALYSIS		
Gross income	6,672	2,700
Cash costs:		
Amortized establishment costs [a]	2,674	1,082
Preharvest and harvest [b]	3,896	1,577
Total	6,570	2,659
Returns over cash costs	102	41

a Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.4 percent.

b Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $166/ha ($67/acre) plus taxes and other overhead costs.

Appendix Table 1. - Marketed Fruit Production, Ontario, 1980-1984

Crop	Unit	1980	1981	1982	1983	1984
			- '000 -			
Apples.....	lb	377,729	254,799	350,613	364,185	317,600
Cantaloupes.....	lb	933	1,078	1,068	1,245	1,085
Cherries, sour..	lb	19,920	5,153	14,290	12,642	15,285
Cherries, sweet.	lb	5,651	1,570	3,030	4,040	5,129
Grapes.....	lb	137,440	137,648	129,519	156,634	180,074
Peaches.....	lb	64,712	35,236	51,841	59,744	45,472
Pears, Bartlett.	lb	25,031	14,972	17,972	18,712	18,383
Pears, Bosc.....	lb	6,184	4,928	4,182	5,970	5,415
Pears, other....	lb	10,542	8,460	4,421	3,697	3,327
Plums & prunes..	lb	9,387	4,428	8,571	5,927	6,658
Raspberries.....	qt	825	716	934	856	820
Strawberries....	qt	18,740	18,449	16,640	14,072	16,492

Source: Seasonal Fruit and Vegetable Report, Annual Summary, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Marketed Fruit Production, Ontario, 1980-1984

Crop	1980	1981	1982	1983	1984
		- tonnes -			
Apples.....	171,338	115,577	159,035	165,192	144,061
Cantaloupes.....	423	489	484	565	492
Cherries, sour.....	9,036	2,337	6,482	5,734	6,933
Cherries, sweet.....	2,563	712	1,374	1,833	2,326
Grapes.....	62,343	62,436	58,749	71,048	81,680
Peaches.....	29,353	15,983	23,515	27,099	20,626
Pears, Bartlett.....	11,354	6,791	8,152	8,488	8,338
Pears, Bosc.....	2,805	2,235	1,897	2,708	2,456
Pears, other.....	4,782	3,838	2,005	1,677	1,509
Plums & prunes.....	4,258	2,009	3,888	2,688	3,020
Raspberries.....	468	406	530	485	465
Strawberries.....	10,626	10,461	9,435	7,979	9,351

Source: Seasonal Fruit and Vegetable Report, Annual Summary, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Appendix Table 2. - Average Prices Received for Fruit, Ontario, 1980-1984

		1980	1981	1982	1983	1984
				- cents/lb -		
Apples	- fresh	10.3	22.3	13.9	15.5	n.a.
	- proc.	5.6	9.2	6.6	6.7	n.a.
Cantaloupes	- fresh	16.2	26.7	27.5	27.3	31.6
Cherries, sour	- fresh	22.7	55.7	23.8	58.6	43.1
	- proc.	25.1	58.1	23.3	50.7	34.5
Cherries, sweet	- fresh	39.9	53.4	55.1	39.6	43.8
	- proc.	26.4	28.7	25.3	30.4	32.3
Grapes	- fresh	19.0	20.6	22.0	23.4	23.0
	- proc.	15.1	16.7	18.6	20.6	18.7
Peaches	- fresh	20.7	29.3	31.9	24.0	30.0
	- proc.	16.6	19.7	21.2	21.3	22.3
Pears	- fresh	18.1	21.2	20.4	20.0	24.7
	- proc.	12.7	14.2	15.5	14.0	15.3
Plums & prunes	- fresh	26.4	26.1	33.1	25.0	33.4
	- proc.	13.9	15.2	16.2	15.9	16.2
Raspberries	- fresh	113.6	145.4	150.2	174.0	177.1
Strawberries	- fresh	45.4	43.3	51.2	53.8	53.5
				- cents/kg -		
Apples	- fresh	22.7	49.2	30.6	34.2	n.a.
	- proc.	12.3	20.3	14.6	14.8	n.a.
Cantaloupes	- fresh	35.7	58.9	60.6	60.2	69.7
Cherries, sour	- fresh	50.0	122.8	52.5	129.2	95.1
	- proc.	55.3	128.1	51.4	111.8	76.1
Cherries, sweet	- fresh	88.0	117.7	121.5	87.3	96.6
	- proc.	58.2	63.3	55.8	67.0	71.2
Grapes	- fresh	41.9	45.4	48.5	51.6	50.7
	- proc.	33.3	36.8	41.0	45.4	41.2
Peaches	- fresh	45.6	64.6	70.3	52.9	66.2
	- proc.	36.6	43.4	46.7	47.0	49.2
Pears	- fresh	39.9	46.7	45.0	44.1	54.5
	- proc.	28.0	31.3	34.2	30.9	33.7
Plums & prunes	- fresh	58.2	57.5	73.0	55.1	73.7
	- proc.	30.6	33.5	35.7	35.1	35.7
Raspberries	- fresh	249.7	320.4	330.7	383.9	391.8
Strawberries	- fresh	100.1	95.4	114.1	118.7	118.0

Source: Seasonal Fruit and Vegetable Report, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Appendix Table 3. - Minimum Prices Paid for Ontario, Tender Fruit for Processing, 1981-1985

	1981	1982	1983	1984	1985
			- $/ton -		
Sweet cherries,					
canning.....	900.50	1,000.50	1,001.50	1,001.50	1,161.50
maraschino.....	520.50	400.50	521.50	561.50	601.50
Sour cherries,					
97 to 100 grade.	1,208.00	520.80	1,053.65	726.90	814.10
74 & below grade	889.00	384.50	775.25	535.50	599.50
Plums.....	260.50	276.50	277.50	291.50	303.50
Prunes.....	300.50	318.50	319.50	335.50	348.50
Damsons.....	320.50	340.50	341.50	358.50	372.50
Bartlett pears,					
No. 1.....	336.00	336.00	291.50	326.50	359.50
No. 2.....	211.00	211.00	181.50	204.50	212.50
Kieffer pears,					
No. 1.....	185.00	185.00	185.50	185.50	185.50
No. 2.....	101.00	101.00	101.50	101.50	101.50
Other pears, No. 1	276.00	276.00	251.50	290.50	319.50
Peaches,					
freestone.....	351.00	373.00	373.50	392.50	408.50
clingstone.....	401.00	426.00	426.50	447.50	465.50

Source: Ontario Tender Fruit Producers' Marketing Board, Annual Report.

Appendix Table 4. - Minimum Prices Paid for Ontario Grapes for Processing, 1980-1984

	1980	1981	1982	1983	1984
			- $/ton -		
Class 1. (Concord, Fredonia, Beta, Clinton, Lincoln, Lomanto, Patricia, President, VanBuren, & Westfield).....	252	280	303	306	295
Class 2. (Elvira, Buffalo, Missouri Riesling, Ontario, Seneca, V35122, & V35123)....	252	291	317	339	316
Class 3. (Niagara).....	233	259	282	287	275
Class 3A. (Agawam, Brighton, Vergennes, Diana, Caco).....	250	277	292	298	285
Class 4. (Veeport).....	297	330	348	362	348
Class 4A. (Catawba & Ventura)..	289	334	364	385	361
Class 5. (Blue French Hybrids, Rosette, Chancellor, Cascade, Baco Noir, Villard Noir, & Chambourcin).....	363	400	430	446	428
Class 5A. (deChaunac).....	306	337	348	361	347
Class 5B. (Chelois).....	363	410	439	458	435
Class 6. (Delaware, Dutchess, N.Y. Muscat, Canada Muscat, Alden, Veeblanc, Vincent)....	477	555	606	636	600
Class 6A. (Marechal Foch & Leon Millot).....	392	420	433	448	430
Class 7. (White French Hybrids, Seibel 8229, 10868, 13047, Aurore, Verdelet, Seyve-Villard 172 & 23512, Seyval Blanc, Siegfried Rebe, & Vidal 256).....	484	570	622	653	615
Class 8. (LeCommandent).....	400	440	453	459	439
Class 8A. (Couderc 29935, Colobel, Florental, & B.S. 2846).....	495	554	605	638	598
Class 9. (J. Riesling).....	672	850	910	868	800
Class 9A. (Chardonnay, Gamay, Aligote).....	672	850	910	933	870
Class 9B. (all other Vinifera).	672	850	910	1,000	925
Class 10. (experimental varieties).....	422	482	538	559	549

Source: Ontario Grape Growers' Marketing Board, Annual Report.